**Amendments to the Drawings:**

Replacement pages for Figs. 6C-D, 7, 9, 10, 12, 13, 16, 17, 19, 44C and 69 adding descriptive labels are attached following page 18.

## REMARKS

After the foregoing amendment, claims 17-27 and 29-42, as amended, are pending in the application. Claim 28 stands canceled. Applicant submits that no new matter has been added to the application by the Amendment.

### Objections to the Drawings

The Examiner objected to Figs. 6B-F, 7, 9, 10, 12-19, 44A-C, 69 and 71A-B because they lack descriptive legends or labels. Applicant has amended Figs. 6C-D, 7, 9, 10, 12, 13, 16, 17, 19, 44A-C and 69 in accordance with the Examiner's objection. The elements of Figs. 6B, 6E, 6F, 14, 15, 18, and 71A-B are currently labeled with reference designators having descriptions in the specification. The descriptions are provided in the specification at the pages shown below:

6B – Page 47 (as amended)

6E – Page 51

6F – Page 51

14 – Page 65

15 – Page 66

18 – Page 69

71A-B – Pages 202-203 (as amended)

Accordingly, Applicant requests reconsideration and withdrawal of the objection to the drawings.

### Introduction

In the Response to Arguments, the Examiner has repeatedly referred to *In re Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993) to justify a broad reading of various terms used in the claims particularly the terms "guide" and "sorting cell" Applicant submits that the facts in *In re Geuns* are different than the facts of the present application and therefore the holding of *In re Geuns* is inapplicable to the present application.

In *In re Geuns*, the applicant attempted to convince the Examiner that a reference disclosing a substantially uniform magnetic field did not read on a claim limitation of "uniform magnetic field" because his invention was a nuclear magnetic resonance (not claimed) apparatus

having a greater uniformity of magnetic field than that of the reference. The Court would not allow him to read the limitation of nuclear magnetic resonance into the claim and simultaneously claim the full breath of the limitation "uniform magnetic field".

In the present application, claim terms such as "guide" and "sorting cell" are specifically defined in the specification. As stated in the MPEP at 2111.01, "Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999)." Accordingly, Applicant is entitled to use those terms in the claims without the terms being otherwise interpreted or without the definition being explicitly incorporated into the claim.

**Rejection - 35 U.S.C. § 102**

The Examiner rejected claim 17 under 35 U.S.C. § 102 as being unpatentable over U.S. Patent No. 5,987,028 (Yang et al.). Applicant respectfully traverses the rejection.

Amended claim 17 recites:

*A method for self-routing a packet to a given destination address through a bit-permuting network having $2^n$ input ports and $2^n$ output ports, the network being characterized by a guide, the method comprising:*

*generating a routing tag for the packet based on the guide of the network and the destination address, and*

*routing the packet through the network using the routing tag.*

In response to Applicant's argument on page 16 of the Office Action, the Examiner states that the control sequence $c_{m-1}$, $c_{,m-2}\ldots c_0$ of Yang et al. is generated by the guide of the network and therefore the Examiner finds no difference between the claimed method of generating a routing tag and the method disclosed by Yang et al. Applicant respectfully disagrees.

As stated at page 81, line 14 of the application, a guide is a specific characterization of the structure of a network defined by the sequence:

$$(\sigma_1\sigma_2 \ldots\sigma_{k-1})(n), (\sigma_2 \ldots.\sigma_{k-1})(n), \ldots., (\sigma_{k-2}\sigma_{k-1})(n), \sigma_{k-1}(n), n.$$

where, $2^n$ is the number of input/output ports of the network, k is the number of stages in the network and $\sigma_k$ is the permutation between the k-1 stage and k stage of the network. Applicant has defined the guide as a specific characterization of network connectivity. Consequently, in accordance with MPEP 2110, a guide should be interpreted as defined in the application.

An example of a computation of a guide is given at page 82, line17 to page 83, line 2 of the application as a straight forward application of group theory. An example of a graphical construction of a guide is given at page 85, line 8, to page 87, line 3 of the application.

Yang et al. generates the control sequence $c_{m-1}$, $c_{,m-2}...c_0$ (routing tag) for an incoming packet by an iterative process described at col. 11, line 4 to col. col. 18, line 13. Applicant is unable to find any correspondence between the method for generating the routing tag based on the method described by Yang et al. and the method of generating a tag using a guide as recited in claim 17 and respectfully requests the Examiner to explain to Applicant how such can be the case.

Amended claim 17 recites "generating a routing tag based on the guide of the network and the destination address. Yang et al. does not disclose generating a routing tag based on a guide. Further, because a "guide" is defined in the Application, it is unnecessary to incorporate the definition of the guide into claim 17. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §102 rejection of claim 17 over Yang et al.

**Rejection - 35 U.S.C. § 102**

The Examiner rejected claims 17-20, 22-26, 30-32 and 41 under 35 U.S.C. § 102 as being unpatentable over U.S. Patent No. 6,335,930 (Lee). Applicant respectfully traverses the rejection.

Claims 17-20

In response to Applicant's argument on page 17 of the Office Action, the Examiner states that the routing tag disclosed by Lee is based on a guide of the network. Applicant respectfully disagrees.

Lee bases the routing tag on the destination address (dn-1 dn-2 ... d1 d0) of an incoming packet (col. 9, lines 65-67). The ith bit di is used to control the routing at the ith stage counted from the right with $0 \leq i \leq n-1$. If di = 0, the input is connected to the upper output. If di = 1, it is connected to the lower output.

Claim 17 recites that a packet is routed through the network by a routing tag which is based on the guide of the network. As discussed above, a guide is a specific characterization of the structure of a network as defined in the application as the sequence $(\sigma_1\sigma_2 \ldots\sigma_{k-1})(n), (\sigma_2 \ldots.\sigma_{k-1})(n), \ldots., (\sigma_{k-2}\sigma_{k-1})(n), \sigma_{k-1}(n), n$. Because the routing tag used by Lee is based on only the destination address and not on the structure of the network, the routing tag disclosed by Lee can not possibly be the same as a routing tag based on a guide.

Applicant submits that Lee does not anticipate amended claim 17. Accordingly, for all the above reasons, Applicant respectfully requests reconsideration and withdrawal of the § 102 rejection of claim 17.

Claim 18 recites generating the routing tag as binary $d_{\gamma(1)}d_{\gamma(2)}\ldots d_{\gamma(k)}$. In other words, the routing tag for an incoming packet is found directly from the guide of the network by permuting the bits of the destination address of the incoming packet by the guide and applying the permuted bits of the destination address, bit wise, to the control of each successive stage of the network. Because Lee discloses that the routing tag is the destination address and not the destination address permuted by the guide, Applicant submits that Lee does not anticipate claim 18.

Further, it is respectfully submitted that since amended claim 17 has been shown to be allowable, amended claims 18-20, dependent on claim 17, are allowable, at least by their dependency. Accordingly, for all the above reasons, Applicant respectfully requests reconsideration and withdrawal of the § 102 rejection of claims 18-20.

Claims 22-26 and 30-32

Claim 22 recites a method for routing a packet through k stage bit- permuting network with a routing tag where the switching elements of the network are sorting cells and the routing tag is based on a guide.

Lee does not teach that each of the switching cells is a sorting cell. As defined at page 159, lines 11-15 of the application, a sorting cell is a two input - two output (i.e.2 x 2) switching element associated with a partially ordered input set, and the input signal switched to output-0 is never greater than the signal switched to output-1. A sorting cell, which operates on the set{0, 1} where 0<1 has a truth table of:

| Connection State | | Input-1 control Signal | |
|---|---|---|---|
| | | 0 | 1 |
| Input-0 Control Signal | 0 | Any | Bar |
| | 1 | Cross | Any |

In contrast to claim 22, Lee teaches the use of switching element having three inputs and three outputs (i.e. 3X3). Each of the input ports of a switch can connect to any one of three output ports based on a control signal (not disclosed). Clearly, the switches disclosed by Lee do not operate the same as the sorting cells defined in the present application and thus can not be construed as sorting cells.

Claim 22 also recites generating a tag based on the guide. The Examiner refers to col. 9, lines 65-67 and col. 10, lines 5-7 to justify that the routing tag is based on a guide. However, Lee clearly states at lines 65-67 that self routing is performed using the destination address as a tag and, as discussed above, a tag using the destination address is not a tag based on the guide.

Applicant submits that Lee does not anticipate amended claim 22. Accordingly Applicant, for all the above reasons, respectfully requests reconsideration and withdrawal of the §102 rejection of claim 22.

Further, it is respectfully submitted that since amended claim 22 has been shown to be allowable, amended claims 23-26, and 30-32, dependent on amended claim 22 are allowable, at least by their dependency. Accordingly, for all the above reasons, Applicant respectfully requests reconsideration and withdrawal of the § 102 rejection of claims 23-26 and 30-32.

Claim 41

Amended claim 41 recites an apparatus for routing a packet through k stage bit-permuting network having a routing tag circuit for generating a routing tag, where the routing tag is based on the guide of the network. As discussed above, Lee does not teach or suggest a guide as it is defined in the present application. Applicant submits that Lee does not anticipate claim 41. Accordingly Applicant, for all the above reasons, respectfully requests reconsideration and withdrawal of the §102 rejection of claim 41.

**Rejection - 35 U.S.C. § 103**

The Examiner rejected claims 21 and 27 as being unpatentable over U.S. Patent No. 6,335,930 (Lee) in view of U.S. Patent No. 5,963,554 (Song). The Examiner states that Lee discloses all the elements of claims 21 and 27 except that the network is a banyan-type network. The Examiner further states that Song teaches a banyan-type network Applicant respectfully traverses the rejection.

Amended claim 21 depends from amended claim 17. Amended claim 17 recites using a routing tag whose contents are based on the guide of the network. With respect to amended claim 17, as discussed above, Lee does not teach or suggest generating a routing tag based on the guide.

Amended claim 27 depends from amended claim 22. Amended claim 22 further recites using a sorting cell as the switching element. With respect to amended claim 22, Lee does not teach or suggest generating a routing tag based on the guide or using a sorting cell as a switching element.

Song is directed to a particular arrangement of unit switches and does not teach or suggest the use of a routing tag based on a guide or the use of a sorting cell. Consequently, Song does not make up for the foregoing deficiencies of Lee. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §103 rejection of claims 21 and 27.

**Rejection - 35 U.S.C. § 103**

The Examiner rejected claim 29 as being unpatentable over U.S. Patent No. 6,335,930 (Lee) in view of U.S. Patent No. 6,058,112 (Kerstein et al.). The Examiner states that Lee discloses all the elements of claim 29 except for an idle packet. The Examiner further states that Kerstein et al. teaches an idle packet. Applicant respectfully traverses the rejection.

Amended claim 29 depends from amended claim 22. Amended claim 22 recites a network which uses a routing tag whose contents are based on the guide of the network. Amended claim 22 further recites using a sorting cell as the switching element. Lee does not teach or suggest generating a routing tag based on the guide or using a sorting cell as a switching element. Kerstein et al. is directed to a decision making engine for monitoring a switch and does not teach or suggest generating a routing tag based on the guide or using a sorting cell as a

switching element. Consequently, Kerstein et al. does not make up for the foregoing deficiencies of Lee. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §103 rejection of claim 29.

**Rejection - 35 U.S.C. § 103**

The Examiner rejected claims 33-35 as being unpatentable over U.S. Patent No. 6,335,930 (Lee) in view of U.S. Patent No. 5,987,028 (Yang et al.). The Examiner states that Lee discloses all the elements of claim 33-35 except for processing related to the leading bits of the routing tag. The Examiner further states that Yang et al. teaches processing the leading bits of the routing tag. Applicant respectfully traverses the rejection.

Amended claims 33-35 depend from amended claim 22. Amended claim 22 recites using a routing tag whose contents are based on the guide of the network. Amended claim 22 further recites using a sorting cell as the switching element. Lee does not teach or suggest generating a routing tag based on the guide or using a sorting cell as a switching element. As discussed above, Yang et al. does not make up for the foregoing deficiencies of Lee. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §103 rejection of claims 33-35.

**Rejection - 35 U.S.C. § 103**

The Examiner rejected claim 42 as being unpatentable over U.S. Patent No. 6,335,930 (Lee) in view of U.S. Patent No. 5,367,518 (Neuman). The Examiner states that Lee discloses all the elements of claim 42 except for disclosing that each of the priority classes is coded in an r-bit string. The Examiner further states that Neuman teaches that real packets are classified into $2^r$ classes. Applicant respectfully traverses the rejection.

Amended claim 42 depends from amended claim 41. Amended claim 41 recites using a routing tag whose contents are based on the guide of the network As discussed above, Lee does not teach or suggest using a routing tag based on the guide. Neuman does not make up for the foregoing deficiency of Lee. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §103 rejection of claim 42.

**Conclusion**

Insofar as the Examiner's objections and rejections have been fully addressed, the instant application, including claims 17-27 and 29-42, is in condition for allowance and Notice of Allowability of claims 17-27 and 29-42 is therefore earnestly solicited.

Respectfully submitted,

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